

Population structure and sociocultural importance of *Tamarindus indica* L. in dry regions of Benin (West Africa)

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Tropical ecosystems are full of multipurpose tree species. In spite of their so reported potentials, these species dynamics and uses have generally been less studied (or only for a short extent) compared to their industrial counterparts. This study assessed *Tamarindus indica*'s population structure in three habitats, mainly in gallery forest, savannah woodlands and parklands in dry lands of Benin. Sampling data from forest inventories have been used to characterize trends in the species population and document how far these trends differ with habitat types in order to build sustainable strategies of conservation. It also permitted to gather information related to its utilization. Data were collected using systematic random sampling and questionnaires, and focusing on distribution patterns, mature trees densities, regeneration density, size class distribution and utilizations. Analyses have been made using MINITAB, SAS and EXCEL ordination statistical packages. The distribution of the number of tree per sampled point differed between habitats ($P < 0.0001$; Kolmogorov-Smirnov two samples test). The variance-to-mean ratio used as an index of aggregation was 1.68, indicating that trees show a relatively clumped distribution. Numbers per hectare of tamarind mature trees and regeneration significantly varied between habitats at $P < 0.001$. The density of mature trees in gallery forest was 8 to 16 times higher than in savannah woodlands and parklands while the regeneration was 13 times higher. Significant variations also occurred between numbers per hectare of tamarind mature trees and regeneration in all habitats ($P < 0.001$). The mean numbers for mature trees and regeneration were 39.12 ± 5.85 versus 13.82 ± 4.46 in gallery forest, 5 ± 0.86 versus 1.11 ± 0.61 in woodlands and 2.46 ± 0.4 versus 0.00 in parklands. The diameter size class distributions departed from normality at $P < 0.0001$ in all habitats. However, the coefficients of skewness and the median diameters have suggested that the species is more vulnerable in parklands and savannah woodlands than in gallery forest. Tamarind played an important role in local communities' livelihoods. Most commonly the fruit (pulp) was used to make drinks, as laxative and purgative and this seems to be the only part sold. The bark was frequently used as a medicine in hardly curable wounds treatment, while the leaves were used to make porridge and as antibiotic.

Anthropogenic activities and practices such as mature trees mutilating, seedling removing and fire were the principal threats to the species. Results do not support the hypothesis which assumes that tamarind trees often grow on mounds in arid ecosystems due to the species' soil requirements.